

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:  
Jochen Kumlehn

Application No.: 10/566821

Confirmation No.: N/A

Filed: January 31, 2006

Art Unit: N/A

For: METHOD FOR THE PRODUCTION OF STABLY  
TRANSFORMED, FERTILE GRAMINEAE  
EMPLOYING AGROBACTERIUM-MEDIATED  
TRANSFORMATION OF ISOLATED GRAMINEAE  
ZYGOTES

Examiner: Not Yet Assigned

TRANSMITTAL FOR INTERNATIONAL PRELIMINARY REPORT ON  
PATENTABILITY (FORM PCT/IB/373) AND NOTIFICATION OF THE RECORDING  
OF A CHANGE (FORM PCT/IB/306)

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Applicant encloses herewith the International Preliminary Report on Patentability (Form PCT/IB373) and Notification of the Recording of a Change (Form PCT/IB/306).

Applicant believes no fee is due with this communication. However, if a fee is due, the Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 03-2775, under Order No. 13173-00023-US, from which the undersigned is authorized to draw.

Respectfully submitted,

By Roberte Makowski  
Roberte M. D. Makowski, Ph.D.

Registration No.: 55,421  
CONNOLLY BOVE LODGE & HUTZ LLP  
1007 North Orange Street  
P.O. Box 2207  
Wilmington, Delaware 19899  
(302) 658-9141  
(302) 658-5614 (Fax)  
Attorney for Applicant

452459

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## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 0000054757	FOR FURTHER ACTION		See item 4 below
	International filing date (day/month/year) 09 July 2004 (09.07.2004)	Priority date (day/month/year) 01 August 2003 (01.08.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant SUNGENE GMBH			

<p>1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																	
<p>3. This report contains indications relating to the following items:</p> <table> <tbody> <tr> <td><input checked="" type="checkbox"/> Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/> Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/> Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/> Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/> Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/> Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/> Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/> Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </tbody> </table>		<input checked="" type="checkbox"/> Box No. I	Basis of the report	<input type="checkbox"/> Box No. II	Priority	<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/> Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/> Box No. VI	Certain documents cited	<input type="checkbox"/> Box No. VII	Certain defects in the international application	<input type="checkbox"/> Box No. VIII	Certain observations on the international application
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<input type="checkbox"/> Box No. VIII	Certain observations on the international application																
<p>4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis.2).</p>																	

<p>Date of issuance of this report 06 February 2006 (06.02.2006)</p>	
<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 740 14 35</p>	<p>Authorized officer Yolaine Cussac</p> <p>Telephone No. +41 22 338 70 80</p>

Form PCT/IB/373 (January 2004)

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## PATENT COOPERATION TREATY

NO. 0609-P. 18

REC'D 16 NOV 2004

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

12/02

WIPO PCT  
PCTWRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)Applicant's or agent's file reference  
see form PCT/ISA/220FOR FURTHER ACTION  
See paragraph 2 belowInternational application No.  
PCT/EP2004/007567International filing date (day/month/year)  
09.07.2004Priority date (day/month/year)  
01.08.2003International Patent Classification (IPC) or both national classification and IPC  
C12N15/82, A01H5/00Applicant  
SUNGENE GMBH & CO. KGAA

## 1. This opinion contains indications relating to the following items:

Box No. I Basis of the opinion  
 Box No. II Priority  
 Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  
 Box No. IV Lack of unity of Invention  
 Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement  
 Box No. VI Certain documents cited  
 Box No. VII Certain defects in the international application  
 Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

## 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
Fax: +31 70 340 - 3016

Authorized Officer

Bucka, A

Telephone No. +31 70 340-2279



WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITYInternational application No.  
PCT/EP2004/007567Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - a sequence listing
    - table(s) related to the sequence listing
  - b. format of material:
    - in written format
    - in computer readable form
  - c. time of filing/furnishing:
    - contained in the international application as filed.
    - filed together with the international application in computer readable form.
    - furnished subsequently to this Authority for the purposes of search.
3.  In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITYInternational application No.  
PCT/EP2004/007567

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**Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or  
industrial applicability; citations and explanations supporting such statement**

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## 1. Statement

Novelty (N)	Yes: Claims	1-12
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-12
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

## 2. Citations and explanations

see separate sheet

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/EP2004/007567

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1 The following documents (D) are considered to be relevant to this application:

D1: WO 97 48814 A (MONSANTO CO) 24 December 1997  
D2: KUMLEHN JOCHEN ET AL: 'Differentiation of isolated wheat zygotes into embryos and normal plants' PLANTA (BERLIN), vol. 205, no. 3, July 1998, pages 327-333, XP002263491  
D3: HOLM P B ET AL: 'TRANSFORMATION OF BARLEY BY MICROINJECTION INTO ISOLATED ZYGOTE PROTOPLASTS' TRANSGENIC RESEARCH, LONDON, GB, vol. 9, February 2000, pages 21-32, XP000945396  
D4: US-B1-6 300 543 (MCGANN LOCKSLEY E ET AL) 9 October 2001

2 Synopsis

The present application describes a method to transform wheat by culturing isolated zygotes in the presence of *Agrobacteria*. The zygotes are isolated from plants a few hours after pollination, transformed by the *Agrobacteria*, and later regenerated into whole plants in the presence of a feeder medium.

3 The subject-matter of **claims 1 to 12** of the present application is new and consequently meets the requirements of Article 33(2) PCT.

4 **Claim 1** relates to a method to transform wheat by incubating isolated zygotes in the presence of *Agrobacteria*, from which the subject matter of document D1, which is considered to represent the closest prior art, differs in that the transformation method described in said document uses immature zygotic embryos isolated from wheat (D1, example 1).

The problem to be solved by the present invention therefore is considered to be the provision of an alternative transformation method suitable for wheat.

The application provides a method in which isolated wheat zygotes are transformed with the help of *Agrobacteria*, thereby solving the problem.

D1 is referring to the same technical problem, namely the stable transformation of

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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.  
**PCT/EP2004/007567**

*Gramineae* using *Agrobacteria*. Said document is describing a technique, *Agrobacterium*-mediated transformation, which has been widely used with dicotyledonous plants, but has been adapted also for the use in monocotyledonous plants.

One of the major problems associated with the transformation of monocotyledonous plants is the difficulty of regenerating plants. This is one of the reasons, why especially embryogenic tissue is used in transformation protocols (D1, pages 12-13).

Therefore, the use of isolated zygotes would have been an obvious choice for the person skilled in the art, especially since document D2 describes the feasibility of regenerating plants from isolated zygotes (D2, discussion). Moreover, D2 contains the explicit remark that the method described therein will be of particular value in the transformation of grasses (cf. D2, page 328, left column). In view of the teachings of documents D1 and D2, the use of isolated zygotes in the transformation technique of D1 would have been an immediately evident alternative for the skilled artisan. Further methods using zygotes in transformation experiments are for instance disclosed in D3 (pages 23-24) and D4 (examples 1-3).

In addition, the claimed method does not seem to offer any surprising technical effect in comparison with the method of the prior art. Although the application states that the described procedure is highly effective (page 6, line 1), no data are provided that would substantiate such an assertion.

For the reasons outlined above, the solution proposed in **claim 1** cannot be considered as involving an inventive step (Article 33(3) PCT).

Similar objections are raised for the subject-matter of **claims 2 to 12**.

- 5 The attention of the applicant is drawn to the fact that the application may not be amended in such a way that it contains subject-matter which extends beyond the content of the application as filed (Article 34(2)(b) PCT).

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## PATENT COOPERATION TREATY

Patente, Marken u. Lizenzen

07 Feb. 2006

PCT

From the INTERNATIONAL BUREAU

To:

1. AST/R  
2. AST/VNOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)Date of mailing (day/month/year)  
20 January 2006 (20.01.2006)PRESSLER, Uwe  
BASF Aktiengesellschaft  
67056 Ludwigshafen  
Germany

Phase beendet, 23.12.05

Applicant's or agent's file reference  
0000054757

## IMPORTANT NOTIFICATION

International application No. ✓  
PCT/EP2004/007567International filing date (day/month/year)  
09 July 2004 (09.07.2004)

## 1. The following indications appeared on record concerning:

 the applicant  the inventor  the agent  the common representativeName and Address  
SUNGENE GMBH & CO. KGAA  
Corrensstr. 3  
06466 Gatersleben  
GermanyState of Nationality DE State of Residence DE  
Telephone No. (0621) 60-94182  
Facsimile No. (0621) 60-52638  
Telex No.2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:  
 the person  the name  the address  the nationality  the residenceName and Address  
SUNGENE GMBH  
Corrensstrasse 3  
06466 Gatersleben  
GermanyState of Nationality DE State of Residence DE  
Telephone No. (0621) 60-94182  
Facsimile No. (0621) 60-52538  
Telex No.

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

 the receiving Office  the designated Offices concerned  
 the International Searching Authority  the elected Offices concerned  
 the International Preliminary Examining Authority  other:The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No. (41-22) 338 70 80

Authorized officer

S. Diot

Telephone No. (41-22) 338 9608

006887240

Form PCT/IB/308 (March 1994)